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EXAMINER	
NGUYEN, JIMMY H	

ART UNIT	PAPER NUMBER
2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/684,205	HETHERINGTON, JACK H.	
	Examiner	Art Unit	
	Jimmy H. Nguyen	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-12 and 14-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-7,10-12 and 14-26* is/are rejected.

7)☒ Claim(s) *8 and 9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is made in response to a REMAND TO EXAMINER for continued prosecution of the application, made by the Board of Patent Appeals and Interferences on 04/18/2006. Claims 1-3, 5-12 and 14-26 are currently pending in the application. An action follows below:

Important Notice to Applicant

2. Regarding to the limitation, "neither plate consuming an entire radial area around the axis of rotation...." in line 5 of claim 25, giving the claim its broadest, reasonable construction and in light of the reasons, in the Appeal Brief filed on 03/19/04, explained regarding to the indefiniteness rejection, the limitation require that neither capacitor plate forms a continuous electrical path around an axis of rotation; in other words, along at least one line extending radially out from the axis of rotation, each plate contains a discontinuity. See page 9, last paragraph of the Appeal Brief filed on 01/07/2004.

3. **Examiner suggests the Applicant to carefully consider the two new references cited in the Conclusion section below and in the Notice of Reference Cited (PTO-892). As best understood, Examiner has tried to analyze the references in terms of limitations in the pending claims.**

Specification

4. The disclosure is objected to because of the following informalities: page 22, "We claim" must be deleted. Appropriate correction is required.

Drawings

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: there are no reference characters corresponding to the arrows shown in figure 1B.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

6. Claims 1, 8-11, 21 and 23 are objected to under 37 CFR 1.75(a) because although these claims meet the requirement 112/2d, i.e., the metes and bounds are determinable; however, the following changes should be made.

As to claims 1 and 11, "user position" (see claim 1, lines 11, 14 and 16) should be changed to -- the position of said elongated member --, and "user position" (see claim 11, lines 13, 16 and 17) should be changed to -- the position of said joystick lever --, so as to make the claimed invention consistent with the disclosure, see specification, page 11, lines 9-11.

As to claims 8 and 9, "stationary signal detecting capacitor", "stationary signal transmitting capacitor plate", "dielectric element", "elongate member" and "a user" should be respectively changed to -- second stationary signal detecting capacitor --, -- second stationary signal transmitting capacitor plate --, -- second dielectric element --, -- second elongate member --, and -- said second elongated members --, so as to make these features to be distinct from the features recited in independent claim 1 and to be consistent with the disclosure, see specification, page 11, lines 9-11.

As to claim 10, "one of the signal-transmitting plates" in line 4 should be changed to -- each segment of the signal-transmitting plate --, so as to make this claim consistent with independent claim 1.

As to claim 21, -- of the elongate member -- should be inserted immediately after "ends" in line 2, in order to define the first and second ends, and "elongate element" should be changed to -- elongate member -- because they are the same.

As to claim 23, "elongate member" in line 2 must be changed to -- joystick lever -- because independent claim 11 recites "a joystick lever" in line 10, instead of an elongate member (also see line 3 of claim 23), and -- of the joystick lever -- should be inserted immediately after "ends" in line 2, in order to define the first and second ends. Examiner suggests that the Applicant should use the same text in order to avoid confusion.

It is in the best interest of the patent community that applicant, in his/her normal review and/or rewriting of the claims, to take into consideration these editorial situations and make changes as necessary.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 25 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Shahoian et al. (USPN: 6,304,091 B1), hereinafter Shahoian.

As per claims above, the claimed invention reads on Shahoian as follows: Shahoian discloses a capacitive position sensor (a position sensor 100, see fig. 3C) for interconnection to a computer (col. 1, lines 20-24, col. 2, lines 41-44, col. 9, lines 51-54) comprising a non-circular dielectric member (a dielectric 107, Fig. 3d, col. 8, line 39) coupled to a scroller wheel (col. 9, lines 3-6), a pair of electrically conductive capacitor plates (a vane 110 corresponding to one of the claimed plates and a combination of stators 102-108 and a PCB 109/120, corresponding to another of the claimed plates; see col. 4, lines 49-50 which explains the vane and the stator both being capacitive plates; and Figs. 3c and 3d, col. 8, lines 37-41, which discloses the stators and the vane on either side of the dielectric); a circuitry (an electronics circuit 50, fig. 3a, col. 8, last line through col. 9, line 2 and col. 9, lines 25-42) and an output (an output used to input the position of a user-manipulated physical manipulandum to the computer, col. 9, lines 51-54).

Further, regarding to the limitations, "neither plate consuming an entire radial area around the axis of rotation...." in line 5 of claim 25 (see Notice to Applicant above), as noting at col. 8, lines 41-42, the Shahoian reference discloses "the vane 110 is rotated about axis B over the stators 102 and 104....", and as noting in Fig. 3C, moreover, the reference shows that neither the vane 110 nor the stators 102, 104 forms a continuous electrical path around the axis B. Accordingly, limitations in the claims are read in the Shahoian reference.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-3, 5-7, 10-12 and 14-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shahoian in view of Baker et al. (US 5,576,704), hereinafter Baker, and further in view of Baker et al. (US 5,418,468), hereinafter Baker II.

As per claims 1 and 2, Shahoian discloses a capacitive position sensor (a position sensor 10/100, see figs. 1 and 3c) for interconnection to a computer (col. 1, lines 20-24, col. 2, lines 41-44, col. 9, lines 51-54) comprising a signal detecting capacitor plate (a second plate or vane 14/56/110, see figs. 1, 3a and 3d), a stationary signal transmitting capacitor plate (a first plate or stator 12/54/102-109, see figs. 1, 3a, 3c and 3d), a dielectric member (a dielectric material 15/107, see figs. 1 and 3d, col. 4, line 19), an elongated member (user manipulandum or joystick handle 112, see col. 9, lines 3-6, fig. 3C), a circuitry (an electronics circuit 50, see fig. 3a) and an output (an output used to input the position of a user-manipulated physical manipulandum to the

computer, see col. 9, lines 51-54). Accordingly, Shahoian discloses the claimed limitations except that Shahoian discloses the signal detecting capacitor plate (14/56/110) movable instead of stationary, as recited in claim above. In other words, the difference between the Shahoian reference and the invention defined in claims above is a stationary of the signal detecting capacitor plate.

However, Baker discloses a related capacitive joystick (see fig. 1) comprising a stationary signal detecting capacitor plate (an electrode 135, see fig. 1, col. 3, line 5), a stationary signal transmitting capacitor plate (another electrode 135, see fig. 1, col. 3, line 5) and a dielectric member (a dielectric body 140, fig. 1, col. 3, line 12) laterally shifting in a plane parallel substantially to the stationary plates. See col. 3, lines 24-30. Baker does not expressly disclose the benefit of laterally shifting the dielectric member in a plane parallel substantially to the stationary plates; however, Baker makes a reference to an earlier application 08/083,414, filed on 06/28/1993 and now patented US 5,418,468 (see Baker, front page, Other Publications section). Baker II expressly teaches "existing capacitive sensor technology has several drawbacks" (see col. 1, lines 47-48). Noting that "such capacitive sensors utilize moving electrically conductive elements to give positional information" (see col. 1, lines 48-50), Baker II evidences that "the moving elements tend to cause poor sensor reliability because the movement weakens the electrical connections" (see col. 1, lines 50-52). Furthermore, Baker II discloses that "the moving elements also introduce unwanted "noise" to the control system" (see col. 1, lines 52-54). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to make the Shahoian signal detecting capacitor plate (14/56/110) being stationary, so that the Shahoian dielectric member (15/107) can shift laterally in a plane parallel

substantially to two stationary plates, in view of the teaching in the Baker reference, because this would prevent a break of electrical connections and any unwanted noise occurred in the device, as taught by the Baker II reference (see Baker II, col. 1, lines 47-54). In the instant case, the motivation for doing so would prevent a break of electrical connections and any unwanted noise occurred in the Shahoian sensor due to the movement of the signal detecting capacitor plate (14/56/110) since the signal detecting capacitor plate (14/56/110) is connected to a power source (58) of the electronic circuit (50) (see fig. 3a), thereby producing an accurate position of the user manipulandum or joystick handle.

Regarding to claim 3, Shahoian further teaches the elongated member (i.e., user manipulandum) being a user graspable joystick (a joystick handle, see col. 9, lines 3-6), and Baker also teaches the same (a control shaft 107, see fig. 1).

Regarding to claims 11 and 12, these claims recite limitations similar to those of claims 1 and 2 above (including a joystick lever of claim 11 corresponding to the claimed elongated member of claim 1), except these claims further recite a housing having a top surface. However, Baker further discloses the joystick further comprising a housing having a top surface, as claimed (see fig. 1). Therefore, these claims are unpatentable over Shahoian in view of Baker.

Regarding to claims 5 and 14, Shahoian further teaches the dielectric element being non-circular (a wedge-shaped dielectric member 107, see fig. 3c) and enabling the circuitry to determine the user rotation of the elongated member (col. 9, lines 3-13).

Regarding to claims 6, 15, 16 and 19, Shahoian further discloses four arcuate segments (stators 102-108, best seen in fig. 3C).

Regarding to claims 7 and 17, Shahoian further discloses the dielectric element being a circular disc (fig. 4 and the description at col. 4, lines 19-21, imply the dielectric element being a circular disc).

Regarding to claim 10, as noting in fig. 3a and the corresponding description at col. 7, lines 15-38 and col. 8, last line through col. 9, line 2, the Shahoian reference implicitly discloses the steps of providing the position sensor and placing the signal detecting plate (14/56/110) at a known electrical potential (a ground potential 58), placing the signal transmitting plate (12/52, 54/102-109) at a first electrical potential (a low potential of the drive signal from the oscillator 60), changing the potential on the signal transmitting plate (12/52, 54/102-109)to a second known potential (a high potential of the drive signal from the oscillator 60), measuring and storing the capacitance between the plates, repeating the above steps for each of segments (52, 54) and determining the position of the dielectric and elongated member (col. 7, line 15 through col. 9, line 13, specifically col. 8, lines 6-11).

Regarding to claim 18, Shahoian further teaches the dielectric element being rectangular-shaped (see fig. 1), circular-shaped (fig. 4) or wedge-shaped (fig. 3c), but does not disclose expressly the dielectric element being oval or egg-shaped, as claimed. However, absent a showing of criticality it would have been within the level of skill in the art and obvious to one having ordinary skill to engineering design the shape an element as desired as was judicially recognized in re Dailey, 149 USPQ 47 (CCPA 1976). Therefore, this claim is rejected for the reason as set forth above.

Regarding to claim 20 as applied to claim 1 above, Shahoian further teaches the segments (52, 54) of the signal transmitting plate (12/52, 54/109) arranged as parallel segments in the X-

direction, and the dielectric member (15/107) under the signal detecting capacitor plate (14/56/110) (best seen in fig. 3d) laterally shifting in the X direction.

Regarding to claims 21 and 23, as noting in fig. 1, Baker discloses the elongated member including a pivoting (a cardan joint 118, fig. 1, col. 2, line 63) and the distal end (an actuating body 125) loosely coupled to the dielectric element (140) so that the dielectric member (140) remains in a plane parallel to the stationary plates (135) as the dielectric member (140) is laterally shifted. See col. 1, lines 5-7, which discloses "relates ... to a joystick that uses capacitive technology to determine the joystick position". See col. 2, lines 60-65, which discloses "The joystick includes a control shaft 105 having a handle 107, which is universally, pivotally mounted relative to a base portion 110 about a pivotal point 115 in the form of a cardan joint 118. An actuating body 125 in the form of a disk is rigidly attached to the control shaft 105 about the pivot mounting 118". See col. 3, lines 11-16, which discloses "dielectric body 140 includes a radially extending disk-shaped section 143 and a rod member 145. The disk shaped section 143 and rod member 145 are integrally formed with the cylindrical portion of the dielectric body 140....". See col. 3, lines 26-28, which discloses "In operation, the actuating body 125 engages the rod member 145, which moves the dielectric body 140 relative to the electrode pair135 in response to pivotal movement of the control shaft 105". Further, see col. 2, line 58 through col. 3, line 31.

Regarding to claims 22 and 24, as mentioned in the rejection to claims 21 and 23 above, Baker discloses "moves the dielectric body 140 relative to the electrode pair 13 in response to pivotal movement of the control shaft 105", see col. 3, lines 27-28. Moreover, Fig. 1 of Baker shows that the electrode pair 135 constrains the dielectric body 140 to move in a plane

substantially parallel to the pair. Based on this disclosure, Baker discloses the feature recited in lines 2-4 of these claims.

Allowable Subject Matter

11. Claims 8 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if rewritten to overcome the objection above.

12. The following is a statement of reasons for the indication of allowable subject matter: the claimed invention is directed to a capacitor position sensor configured for interconnection to a utilization device. Claims 8 and 9 identify the uniquely distinct features, "a pair of assemblies, each including ... x and y dimensions" (see last 5 lines of claim 8). The closest prior arts, Komatsu, Dammeyer, and Shahoian all discussed in the rejections above, either singularly or in combination, fail to anticipate or render the above underlined limitations obvious.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Dammeyer et al. (WO 98/50759, hereinafter Dammeyer), with respect to claims 1-3, 11 and 12, discloses a capacitive sensing joystick device configured for interconnection to a computer such as a game controller (see Fig. 1, page 1, first paragraph), comprising an inherent housing having a top surface; a stationary signal-detecting capacitor plate (an upper printed circuit board 35, see Fig. 1 or 2, page 4, lines 18-22); a stationary signal-transmitting capacitor plate (a lower printed circuit board 40, see Fig. 6, page 6, lines 22-25) spaced apart from the signal-detecting capacitor plate (35) by spacers (45) (see Fig. 1, page 4, lines 6-7) and divided

into a plurality of electrically separated segments (plates P9-P12) (see Fig. 6, page 6, lines 22-25); a dielectric member (a dielectric disk 30) (see Fig. 1 or 2, page 4, lines 4-7), an elongate member (of claim 1) or a joystick lever (of claim 11) (a control handle 10 including a shaft 15 and a pivot assembly 20, see Fig. 1, page 4, lines 2-4) supported for pivotal movement having a proximal end for user engagement and a distal end which inherently extends through the top surface of the housing and extends through the signal-detecting capacitor plate (35) (see Fig. 1 or 2, page 4, lines 11-16), enabling the elongate member (the joystick lever) to laterally shift the dielectric element (30) in x and y directions in a plane substantially parallel to the stationary plates (35, 40) as a function of the user position (see Figs. 4 and 5, page 6, line 3 through page 7, line 18); a circuitry (as shown in Fig. 7) in electrical communication with the stationary plates, the circuitry being operative to (a) measure the capacitance between each segment (P9-P12) of the signal-transmitting plate (40) and the signal-detecting plate (35) and (b) determine user position as a function of the measured capacitance (see Fig. 7, page 6, line 29 through page 7, line 18); and an output for providing the X and Y positions to the game controller (Fig. 7, page 1, first paragraph).

Dammeyer, with respect to claims 6, 15, 16 and 19, discloses the electrically separated segments (P9-P12) of the signal-transmitting plate (40) being arcuate (Fig. 6).

Dammeyer, with respect to claims 7 and 17, discloses the dielectric element (30) being a circular disc (Fig. 1 or 2).

Dammeyer, with respect to claim 10, discloses a step of providing the position sensor (see discussed above) and each of the segments (P1-P8/P9-12) and the signal-detecting plate (60) connected to a capacitance measuring circuit for measuring the capacitance between each

segment and the signal-detecting plate (see Fig. 7 and the description, page 6, line 29 through page 7, line 18). Moreover, in order to know the capacitance between each segment and the signal-detecting plate, a potential between each segment and the signal-detecting plate must be known. In other words, steps of placing the signal-detecting plate at a known electrical potential, placing one of the signal-transmitting plates at a first electrical potential, changing the potential on the signal-transmitting plate to second known potential are inherently disclosed by the Dammeyer reference in order to perform a step of measuring each capacitance between each segment and the signal-detecting plate. Further, the capacitance measuring circuit (80) of Dammeyer inherently stores all the measured capacitances in order to provide measured capacitances to a position determining circuit (85) (see Fig. 7). Dammeyer further teaches a position determining circuit (85) for receiving the measured capacitance between each segment and the signal-detecting plate and determining the X and Y positions of the dielectric element and elongate member as a function of the stored capacitance measurements.

Dammeyer, with respect to claim 20, discloses the segments (P9, P10) parallel with segments (P12, P11) in a direction which separates segments (P9, P10) from segments (P12, P11) (see Fig. 6).

Dammeyer, with respect to claims 21 and 23, discloses that the elongated member (10) includes a pivoting (a pivot assembly 20) between the first and second ends of the elongated member (see Fig. 1, page 4, first paragraph) and the distal end of the elongated member is loosely coupled to the dielectric element (30) so that the dielectric element remains in a plane substantially parallel to the stationary plates (35, 40) as the dielectric element (30) is laterally shifted (see Figs. 1 and 5, page 6, lines 7-21).

Dammeyer, with respect to claims 22 and 24, discloses that the movement of the dielectric element (30) is constrained by the spacing of stationary plates (35, 30) so that the dielectric element remains in a plane substantially parallel to the stationary plates (35, 40) as the dielectric element (30) is laterally shifted (see Figs. 1 or 2, page 4, lines 4-9).

Komatsu (US 5,479,191), with respect to claims 1-3, 11 and 12, discloses a capacitive sensing joystick device (a coordinate input device as shown in Fig. 1) configured for interconnection to a computer (see Fig. 12, col. 10, lines 12-15), comprising a housing (a hollow case 1, see Fig. 1 or 4) having a top surface (see Fig. 1); a stationary signal-detecting capacitor plate (a second member 4, see Fig. 2 or 4, col. 6, lines 28-43); a stationary signal-transmitting capacitor plate (a first member 3, see Fig. 2 or 4, col. 6, lines 9-43) spaced apart from the signal-detecting capacitor plate (35) (see Fig. 5) and divided into a plurality of electrically separated segments (four electrodes 32a-32d) (see Fig. 2, col. 6, lines 9-13); a dielectric member (a disk-like dielectric unit 21) (see Fig. 2, col. 6, lines 7-9), an elongate member (of claim 1) or a joystick lever (of claim 11) (a knob 6, see Fig. 5, col. 7, lines 30-32) supported for pivotal movement having a proximal end for user engagement and a distal end which extends through the top surface of the housing and the signal-detecting capacitor plate (4) (see Fig. 5), enabling the elongate member (6) to laterally shift the dielectric element (21) in x and y directions in a plane substantially parallel to the stationary plates (3, 4) as a function of the user position (see Figs. 6 and 7, col. 6, lines 28-43); a circuitry (as shown in Figs. 8 and 9) in electrical communication with the stationary plates (3, 4), the circuitry being operative to (a) measure the capacitance between each segment (32a-32d) of the signal-transmitting plate (3) and the signal-

detecting plate (4) and (b) determine user position as a function of the measured capacitance (see Fig. 8, col. 6, line 43 through col. 7, line 24); and an output for providing the X and Y positions to the computer (100) (see Fig. 12, col. 10, lines 1-15).

Komatsu, with respect to claims 6, 15, 16 and 19, discloses the electrically separated segments (32a-32d) of the signal-transmitting plate (3) being arcuate (Fig. 2).

Komatsu, with respect to claims 7 and 17, discloses the dielectric element (21) being a circular disc (Fig. 2).

Komatsu, with respect to claim 10, discloses a step of providing the position sensor. As noting in Figs. 7-9 and the description, col. 6, line 43 through col. 7, line 7, line 25 and col. 9, lines 2-6, Komatsu discloses the steps of placing the signal-detecting plate at a known electrical potential, ... stored capacitance measurements" in lines 2-10 of this claim. Specifically, Komatsu discloses "In the above-mentioned ..., each of the four electrode faces 32a to 32d of the first member 3, the electrode face 41 of the second member 4, and the dielectric unit 21 cooperate to concentric a variable capacitor..... When a potential is applied between the ... the reference" (see col. 6, line 43 through col. 7, line 1). Accordingly, all the steps of this claim are read in the Komatsu reference.

Komatsu, with respect to claim 20, discloses segments (32a, 32d) parallel with segments (32c, 32b) in a direction which separates segments (32a, 32d) from segments (32c, 32b) (see Fig. 2).

Komatsu, with respect to claims 22 and 24, discloses that the movement of the dielectric element (21) is constrained by the spacing of stationary plates (3, 4) so that the dielectric element

remains in a plane substantially parallel to the stationary plates (3, 4) as the dielectric element (21) is laterally shifted (see Figs. 6 and 7).

With respect to the feature, "dielectric element is non-circular" of claim 5, 14 and 25, Brasseur et al. (US 5,598,153, cited in IDS) discloses a related capacitive sensor (see fig. 1) comprising a movable dielectric element (3) (see Figs. 1 and 2). Brasseur further teaches that the size and the shape of the dielectric element (a rotor 3, col. 3, lines 32-33) dependant upon the number of segments (sectors S) of the stationary signal-transmitting capacitor plate (2), e.g., if a number of segments (sectors S) of the stationary signal-transmitting capacitor plate (2) is four (Fig. 1), the dielectric member (3) may have a shape of semicircular (i.e., non-circular) (see col. 3, lines 56-61). Brasseur further teaches that the motivation for using non-circular shape of dielectric element would improve an accuracy of measured capacitance and the position of the dielectric element (see col. 2, lines 45-52).

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy H. Nguyen whose telephone number is 571-272-7675. The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached at 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JHN
August 30, 2006

Jimmy H. Nguyen
Primary Examiner
Technology Division: 2629